

Application No. 10/707,099

Docket No.: 60680-1818

REMARKS

This amendment is intended to be fully responsive to the Final Office Action having a mailing date of November 16, 2005, wherein claims 1-5 and 7-15 were rejected. Applicant has carefully reviewed the Final Office Action and thanks the Examiner for the detailed review of the pending claims. Claims 1 and 9 - 11 have been amended. Claims 7 and 13 have been cancelled. Applicant respectfully requests reconsideration of the present application in view of the above amendment and the following remarks.

Claim Objections

Claims 9 and 10 were objected to because of informalities. Applicant has amended claims 9 and 10 as suggested by the Examiner to overcome the objections. Withdrawal of the objection is respectfully requested.

Previous Claim Rejections – 35 U.S.C. § 103

Claims 1-16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicant's FIG. 1 in view of any of the following: US 1,404,540 (Norwood '540), US-RE 14,969 (Norwood '969), US 1,471,700 (Moore), US 1,534,198 (Wilson), US 1,557,256 (Bonsky) and US 1,586,459 (Norton). Applicant respectfully traverses this rejection.

The Law

Obviousness cannot be established by combining prior art to produce the claimed invention absent some teaching or suggestion supporting the combination. The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification.

MPEP Section 2143 sets forth the basic requirements for the Patent and Trademark Office to establish prima facie obviousness as follows: "To establish a prima facie case of obviousness, three criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary

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skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.”

A patent claim is obvious, and thus invalid, when the differences between the claimed invention and the prior art “are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art.” 35 U.S.C. § 103; see also Graham v. John Deere Co., 383 U.S. 1, 14, 86 S.Ct. 684, 15 L.Ed.2d 545 (1966); In re Dembiczak, 175 F.3d 994, 998 (Fed. Cir. 1999). While obviousness is ultimately a legal determination, it is based on several underlying issues of fact, namely: (1) the scope and content of the prior art; (2) the level of skill of a person of ordinary skill in the art; (3) the differences between the claimed invention and the teachings of the prior art; and (4) the extent of any objective indicia of non-obviousness. See Graham, 383 U.S. at 17-18. When obviousness is based on the teachings of multiple prior art references, the Examiner must also establish some “suggestion, teaching, or motivation” that would have lead a person of ordinary skill in the art to combine the relevant prior art teachings in the manner claimed. See Tec Air, Inc. v. Denso Mfg. Mich. Inc., 192 F.3d 1353, 1359-60 (Fed. Cir. 1999); Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc., 75 F.3d 1568, 1572 (Fed. Cir. 1996). The Applicant(s) may rebut a prima facie showing of obviousness with evidence refuting the Examiner’s case or with other objective evidence of nonobviousness. See WMS Gaming, Inc. v. Int’l Game Tech., 184 F.3d 1339, 1359 (Fed. Cir. 1999).

“The reason, suggestion, or motivation to combine [prior art references] may be found explicitly or implicitly: 1) in the prior art references themselves; 2) in the knowledge of those of ordinary skill in the art that certain references, or disclosures in those references, are of special interest, or importance in the field; or 3) from the nature of the problem to be solved, ‘leading inventors to look to references relating to possible solutions to that problem.’” Ruiz v. A.B. Chance Co., 234 F.3d 654, 665 (Fed.Cir. 2000) (quoting Pro-Mold, 75 F.3d at 1572). “Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for showing of the teaching or motivation to combine prior art references.” Dembiczak, 175 F.3d at 999; see also Ruiz, 234 F.3d at 665 (explaining that the temptation to engage in impermissible hindsight is

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especially strong with seemingly simple mechanical inventions). This is because “[c]ombining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor’s disclosure as a blueprint for piecing together the prior art to defeat patentability—the essence of hindsight.” Dembiczak, 175 F.3d at 999. Therefore, we have consistently held that a person of ordinary skill in the art must not only have had some motivation to combine the prior art teachings, but some motivation to combine the prior art teachings in the particular manner claimed. See, e.g., In re Kotzab, 217 F.3d 1365, 1371 (Fed.Cir. 2000) (“Particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed.” (Emphasis added)); In re Rouffet, 149 F.3d 1350, 1357 (Fed.Cir. 1998) (“In other words, the examiner must show reasons that the skilled artisan, confronted with the same problems as the inventor, and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed.” (Emphasis added)).

In this case, the Examiner has not explained why a person of ordinary skill in the art would have found it obvious to combine the references in the manner proposed by the Examiner. In particular, the Examiner has not shown that any reference specifically recognized the advantages discussed in Applicant’s application.

Independent Claims 1 and 11

Norwood ‘540 and Norwood ‘969

Norwood ‘540 and Norwood ‘969 cannot be combined with Applicant’s FIG. 1 because the alleged “projections” of Norwood ‘540 and Norwood ‘969 are essentially on the wrong side of the ring with respect to the combustion chamber. (See Norwood ‘540, FIG. 1; See Norwood ‘969, FIGS. 1-2). Both FIGS. 1 of Norwood ‘540 and Norwood ‘969 clearly indicate the combustion chamber side of the ring as the same side as the spark plug and opposite the piston rod. Claim 1, as amended, requires “said projection extends radially outwardly from said outer peripheral face along said upper surface.” Claim 11, as amended, requires “said projection extends radially outwardly along said upper surface, wherein said projection reduces exposure of said outer peripheral face to the combustion chamber.”

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However, the rings of Norwood '540 and Norwood '969 do not disclose the claimed limitations including a projection on the combustion side (e.g., the upper side) of the ring. Actually, Norwood '540 and Norwood '969 disclose a ring having the alleged projections on the piston rod side that is *opposite the combustion chamber*.

The projection is described in the specification and is illustrated in Applicant's FIG. 4 where "[t]he projection 116 preferably extends outwardly along the upper surface 104 of piston ring 100." (See FIG. 4; ¶ [0020]). Additionally, the side of the ring closest to the combustion chamber is illustrated as top surface 104 where "gap 130 is typically exposed to gases from the combustion chamber." (See FIG. 5; ¶ [0022]). In comparing Applicant's FIG. 1 and FIG. 4, the combustion side of the ring is apparent from the above description and the Figures. When comparing Applicant's FIG. 1 with Norwood '540 and Norwood '969, it is clear that the Norwood rings include an alleged projection that is not on the combustion side of the ring. Thus, the alleged projections of Norwood '540 and Norwood '969 are on the wrong side of the ring and should not be combined with Applicant's FIG. 1.

Therefore, the rejection of Applicant's FIG. 1 in view of Norwood '540 and Norwood '969 has been traversed because the combination does not disclose each and every limitation of claims 1 and 11.

Moore

Moore is directed to an oil scraping groove 4. (See FIG. 2; Page 1, Col. 2, Lines 81-91). However, it is apparent from the Figures and detailed description that the ring was not meant to be twisted. (See FIG. 2). For example, the face (near 8) of ring 1 is parallel with the outer surface of piston 6, and logically, the cylinder wall. (See FIG. 2). Additionally, the inner surface (near 8) of ring 1 is parallel with the ring groove cut into the circumference of piston 6. (See FIG. 2). Thus, ring 6 lies in the ring groove and has inner and outer surfaces parallel to the cylinder wall and the piston, respectively. (See FIG. 2).

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Thus, there is no teaching or motivation in the art to provide a protrusion to protect an outer surface of a twisted ring from combustion gasses. (See claims 1 and 11). As stated in the prior office action, the motivation for a § 103 rejection cannot be derived from the Applicant's disclosure. Therefore, absent some teaching or motivation not found in Applicant's disclosure, Moore cannot be combined with FIG. 1 of the Applicant's disclosure to anticipate the claims.

Wilson

Wilson is directed to a floating piston ring. (See Page 2, Col. 2, Lines 72-82). Wilson illustrates a circumferential oil groove 6 and an alleged generally rectangular projection. (See FIGS. 4-5). However, as amended, claim 1 requires a piston ring having "at least one inner face in twisting contact with the inner boundaries of the groove." Claim 11 includes the limitation that "said inner peripheral face is in twisting contact with said ring groove." However, Wilson does not disclose "twisting" a ring or the claimed twisting contact. It is apparent from FIGS. 4-5 and detailed description that the ring was not meant to be twisted. Indeed, the detailed description of Wilson explains the operation of the ring as moving from contact with M to contact with P through the combustion cycle. (See FIGS. 4-5; Page 2, Col. 2, Lines 110 - 122).

Thus, Wilson is not intended for use with a twisted ring. Nor does Wilson suggest combining the teachings of the disclosure with a twisted ring.

It is also important to note that Wilson does not disclose a purpose for the alleged generally rectangular projection illustrated in FIGS. 4-5. Rather, Wilson describes the oil groove 6 in detail. (See Page 2, Col. 1, Lines 44-56). Thus, it is apparent from the disclosure that the alleged generally rectangular projection functions to hold oil from passing by the ring into the combustion chamber. Therefore, the alleged teaching and motivation to combine Wilson with Applicant's FIG. 1 are improper as Wilson teaches away from the claimed invention with respect to the allegedly rectangular projection.

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Norton

Norton describes a ring having two sealing portions 14, 15 that bear against the cylinder wall. (See Page 1, Col. 1, Lines 53-56). Groove 16 is used to collect oil scraped from the cylinder wall. (See Page 2, Col. 1, Lines 1-5). Applicant notes that none of the references cited, other than Applicant's own FIG. 1, are directed to "napier" style twisted rings. All of the alleged protrusions cited by the examiner either perform a sealing function or is simply a byproduct of cutting an oil groove. Thus, the prior art references, including Norton, do not teach or suggest the claimed invention.

Here, Norton does not describe the claimed invention because the alleged projection is a byproduct of cutting groove 16. Thus, the teachings of Norton do not relate to the alleged protrusion. Again, it is improper to combine a reference having a projection simply because the projection exists. In the context of the claimed invention, a projection existing in Norton would not have been contemplated because there is no motivation to combine the divergent configurations of rings.

New Claim Rejections – 35 U.S.C. § 102

Claims 1-5, 7, 11, 13, and 15 are rejected under 35 U.S.C. § 102(b) as allegedly anticipated by U.S. Patent Number 2,340,466 (Gosling). Applicant respectfully traverses the rejection.

Independent Claims 1 and 11

Claim 1 requires that "a lower surface of the piston ring includes a generally hook-shaped groove" and claim 11 requires that "said lower surface further includes a generally hook-shaped groove." However, Gosling does not include a hook-shaped groove on a "lower surface." Indeed, the Examiner points to the hook-shaped groove on an outer face of the ring. (See Office Action, Figure on Page 12). Further, the Figures of Gosling do not indicate a hook-shaped groove on a lower surface. On the contrary, Gosling discloses rings having substantially flat bottom surfaces or having curves from the lower surface to an inner surface. (See FIGS. 2-4). Thus, Gosling does not disclose the required limitations of claims 1 and 11.

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Claim 1, as amended, is directed to “[a] piston ring for use with an internal combustion engine” that Gosling does not disclose. Indeed, Gosling discloses a ring for braking systems having liquid applications (i.e., brake fluid). (See Gosling; FIG. 1; Page 1, Col. 2, Lines 7-11). Also, as amended, claim 1 requires “said projection reducing exposure of said outer peripheral face to the combustion gasses.” Of course, as Gosling is directed to liquid braking systems, the limitation of claim 1 cannot be present. Similarly, claim 11 is directed to “[a] piston ring ... for use with a combustion chamber.” Claim 11 requires that “said projection reduces exposure of said outer peripheral face to the combustion chamber.” Thus, as with claim 1, Gosling does not include the required claim limitations.

Additionally, claim 1 as amended, requires a piston ring having “at least one inner face in twisting contact with the inner boundaries of the groove.” Claim 11 includes the limitation that “said inner peripheral face is in twisting contact with said ring groove.” However, Gosling does not disclose “twisting.” To the contrary, Gosling shows that “[t]he main body 29 of the packing fits closely between the flange 27 and the rib 28, the base of the groove between these parts being slightly greater in diameter than the interior of the part 29 of the packing, so that the latter engages firmly with the base of the groove.” (See Page 2, Lines 24-30). Thus, Gosling does not disclose the “twisting” contact as is required by claims 1 and 11.

Therefore, Gosling does not disclose the required claim limitations regarding the “hook-shaped groove,” the limitations related to internal combustion engines, and the “twisting contact” as is required by claims 1 and 11. Thus, because Gosling does not disclose each and every claim limitation, claims 1 and 11 are in condition for allowance.

Dependent Claims 2-5, and 15

Dependent claims 2-5 depend from claim 1. Further, dependent claim 15 depends from claim 11. Thus, by virtue of their dependency, these claims are also patentable. Therefore, dependent claims 2-5, and 15 are in condition for allowance.

Moreover, the dependent claims contain additional features not shown or taught in the prior art. For example, dependent claim 4 requires the limitation “wherein a gap is defined *between* said outer peripheral face and the surrounding cylinder wall.” (Emphasis added). However, such a gap is not shown in Gosling.

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New Claim Rejections – 35 U.S.C. § 103

Claims 8-10, 12, and 14 are rejected under 35 U.S.C. § 103(a) as allegedly anticipated by Gosling in view of any of the following: Norwood '540, Norwood '969, Moore, Wilson, or Norton. Applicant notes that the § 102 arguments above related to Gosling and the § 103 arguments above with respect to Norwood '540, Norwood '969, Moore, Wilson, and Norton are equally applicable here. Applicant respectfully traverses the rejection.

Applicant respectfully traverses the 103(a) rejections because there is no suggestion, motivation, or objective reason to combine the cited references. "If identification of each claimed element in the prior art were sufficient to negate patentability, very few patents would ever issue." *In re Rouffet*, 47 USPQ2d 1453 at 1457 (Fed Cir. 1998). "Rejecting patents solely by finding prior art corollaries for the claimed elements would permit an examiner to use the claimed invention itself as a blueprint for piecing together elements in the prior art to defeat the patentability of the claimed invention. Such an approach would be 'an illogical and inappropriate process by which to determine patentability'." *Id.* (Quoting *Sensonics, Inc. v. Aerosonic Corp.*, 81 F.3d 1566, 1570, 38 USPQ2d 1551, 1554 (Fed. Cir. 1996)).

The Ring of Gosling Should Not Be Combined

The ring of Gosling operates in a different setting and in a different manner from the claimed invention. The claimed invention as described in the specification, and as amended, is directed to internal combustion engines. (See independent claims 1 and 11; See ¶ [0002]). In contrast, the ring of Gosling is directed to liquids and in particular to braking systems including master cylinders. (See Gosling; FIG. 1; Page 1, Col. 2, Lines 7-11). As can be appreciated by one skilled in the art, the rates of travel for rings associated with internal combustion engines and rings for braking systems are significantly different. It is known that braking system rings operate at significantly reduced rates of travel than internal combustion rings.

Further, the method of operation and sealing of Gosling opposes the present invention. Thus, Gosling teaches away from the present invention. As explained in Gosling, "[t]he lip 31 thus presents to the chamber 17 an inclined surface sloping rearwardly from the cylinder wall to provide an acute angle at its junction with the outer face of the packing, and liquid pressure in

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the cylinder acts on this sloping surface to urge the packing against the cylinder wall.” (See Page 2, Col. 1, Lines 40-45).

On the contrary, one aspect of the present invention is to reduce ring collapse due to exposure to combustion gasses on the outer peripheral face 110. (See Paragraph [0023]). Indeed, as compared with the present invention, the pressure described in Gosling is on the opposite side of the ring, and acting upon the bottom face of the ring. Further, Gosling desires the pressure against the ring and uses the pressure to expand the ring. (See Page 2, Col. 1, Lines 40-45). The claimed invention, contrarily, reduces the exposure of the pressure to the ring's outer peripheral face. (See claim 1, as amended, “said projection reducing exposure of said outer peripheral face to the combustion gasses”; and claim 11, as amended, “said projection reduces exposure of said outer peripheral face to the combustion chamber”).

Thus, it is clear that Gosling teaches away from the claimed invention because the use and structure of the ring teaches away from Applicant's disclosure and the claims. Therefore, in addition to the § 102 arguments, Gosling should not be used alone, or in combination with Applicant's FIG. 1, to anticipate the claimed invention.

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CONCLUSION

In view of the above amendment, applicant believes the pending application is in condition for allowance.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 18-0013, under Order No. 60680-1818 from which the undersigned is authorized to draw.

Dated: January 17, 2006

Respectfully submitted,

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